



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

22

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/048,214	01/30/2002	Leszek Lisowski	Q68305	4778

23373 7590 08/20/2003

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037

EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/048,214

Applicant(s)

LISOWSKI, LESZEK

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-17 and 19-21 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (EP 798844) in view of Lamb (US 5,834,872). Yang teaches a continuously variable electromagnetic transmission including: a commutatorless, axial flux ("disk shape; c.7, line 12; Fig.30-1) dynamoelectric machine provided with an input shaft and an output shaft (not numbered, see c.40, line 50-c.41, line 38; Figs.30&30-1); control means for controlling and supplying electric power at a variable frequency to said machine (c.8, lines 12-15); and, with reference to Fig.1, said dynamoelectric machine including a first rotor 103 (driven by power source PO, Fig.1) connected to said input shaft, a second rotor 102 connected to said output shaft and a stationary stator assembly 101, said two rotors and said stator assembly comprising discoid elements (c.7, line 12; embodiment of Figs.30&30-1), said discoid elements of said stator assembly and of at least one of said rotors comprising active elements having windings connected to said control means and arranged to interact with the other rotor by means of magnetic flux through air gaps including axial air gaps between respective discoid elements of said rotors and said stator assembly (c.7, lines 1-32).

Yang does not teach that his transmission includes "displacement means for axially displacing at least one of said discoid elements to modify the width of the axial air gap between this discoid element and an adjacent discoid element."

Lamb teaches an adjustable magnetic coupler comprising plural conductor rotors 22/26 magnetically coupled with plural magnet rotors 24/25 and movable axial relative to each other by means of a reversible servo motor 63, which pushes and pulls the magnet rotors 24/25 to vary the widths of respective air gaps 48-48' (Figs.1-2; c.4, lines 41-44). Gap adjustment varies the slip and provides control over the speed and torque, among other advantages (c.2, lines 20-34)

It would have been obvious to one having ordinary skill in the art to modify Yang's axial-gap electro-magnetic transmission and provide a means to modify the width of the air gap as in Lamb since this would have been desirable to vary the slip and provide speed and torque control.

Regarding claims 12-14, Yang teaches reactive elements for the rotors or stator including permanent magnets (c.7, lines 1-32). Lamb also teaches reactive elements comprising permanent magnets 46 (c.3, lines 23-32).

Regarding claims 15-16, various numbers of rotors are taught by Yang, e.g. c.69, lines 23-32. In particular, with regard to claim 16, note the "common magnetic pole" 101 located between inner and outer layer armatures 102 and 103 (Fig.1). A similar arrangement is shown in Fig.30&30-1, as discussed above. With regard to claim 15, note that Lamb's rotors each comprise two discoid elements, i.e., conductor rotors 24/25 and magnet rotors 24/25. The magnet rotors 24/25 are between the conductor rotors 22/26 (Fig.1).

Art Unit: 2834

Regarding claim 17, in Lamb, an axial screw mechanism comprises output shaft 61 (driven in rotation by servo motor 63) threaded to ball type nut 62 so that operation of the motor causes axial movement of the ball nut (c.4, lines 44-46).

Regarding claim 19, various gear mechanisms such as ring, sun and planetary wheels 113/114/115 are disclosed by Yang for connecting the first and second rotors mechanically (c.36, lines 39-59, Fig.2).

Regarding claim 20, the adjustment of the air gap in Lamb could include an adjustment such that the air gap distance was zero, thus achieving direct mechanical connection between the respective pairs of rotors 22/26 and 24/25.

3. Claims 11-17 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroedl (WO 99/39426) in view of Lamb (US 5,834,872). Schroedl teaches a continuously variable electromagnetic transmission, including a commutatorless, axial flux dynamoelectric machine provided with an input shaft and an output shaft (Fig.3), and control means for controlling and supplying electric power at a variable frequency to said machine (p.3, lines 15-21, p.4, lines 1-6), said dynamoelectric machine including a first rotor 4 connected to said input shaft, a second rotor 5 connected to said output shaft and a stationary stator assembly 1, said two rotors and said stator assembly comprising discoid elements (Fig.3), said discoid elements of said stator assembly and of at least one of said rotors comprising active elements having windings connected to said control means and arranged to interact with the other rotor by means of magnetic flux through air gaps including axial air gaps between respective discoid elements of said rotors and said stator assembly (c.6, lines 23-29).

Schroedl does not teach that his transmission includes "displacement means for axially displacing at least one of said discoid elements to modify the width of the axial air gap between this discoid element and an adjacent discoid element."

Lamb teaches an adjustable magnetic coupler comprising plural conductor rotors 24/25 magnetically coupled with plural magnet rotors 24/25 and movable axial relative to each other by means of a reversible servo motor 63, which pushes and pulls the magnet rotors 24/25 to vary the widths of respective air gaps 48-48' (Figs.1-2; c.4, lines 41-44). Gap adjustment varies the slip and provides control over the speed and torque, among other advantages (c.2, lines 20-34)

It would have been obvious to one having ordinary skill in the art to modify Schroedl's axial-gap electro-magnetic transmission and provide a means to modify the width of the air gap as in Lamb since this would have been desirable to vary the slip and provide speed and torque control.

Allowable Subject Matter

4. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claim 18, the prior art, in particular Lamb, does not teach that the displacement means includes a cam mechanism driven by an electric motor.

Art Unit: 2834

Response to Arguments


5. Applicant's arguments with respect to claims 11-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.


Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
August 16, 2003